$$\underbrace{2y^2t - 2y^3}_{M(t,y)} + \underbrace{(4y^3 - 6y^2t + 2yt^2)}_{N(t,y)} \cdot y' = 0 .$$

$M \in C(\mathbb{R}^2)$, $N \in C(\mathbb{R}^2)$

$$\frac{\partial V(t,y)}{\partial t} = 2y^2t - 2y^3 \Rightarrow V(t,y) = y^2t^2 - 2y^3t + X(y)$$

$$\frac{\partial V(t,y)}{\partial y} = \cancel{2yt^2} - \cancel{6y^2t} + X'(y) = 4y^3 - \cancel{6y^2t} + \cancel{2yt^2} \Rightarrow$$

$X'(y) = 4y^3$. Odtud např. $X(y) = y^4$.

$$V(t,y) = y^4 - 2y^3t + y^2t^2 = (y^2 - yt)^2 .$$

$$(y^2 - yt)^2 = C^2, \quad C \in \mathbb{R}$$

$$y^2 - yt = C$$

$$y_1(t) = \frac{t - \sqrt{t^2 + 4C}}{2}, \quad t^2 + 4C > 0$$

$$y_2(t) = \frac{t + \sqrt{t^2 + 4C}}{2}, \quad t^2 + 4C > 0 .$$